

What is claimed is:

- 1           1.     A method for use in a mobile communications network, comprising:  
2                 defining a band of carrier frequencies for the mobile communications  
3 network;  
4                 for a first cell segment, allocating one of the carrier frequencies in the  
5 band for communicating beacon control signaling; and  
6                 for another cell segment, allocating the one of the carrier frequencies to  
7 carry bearer traffic.
- 1           2.     The method of claim 1, further comprising allocating a plurality of carrier  
2 frequencies to the first cell segment,  
3                 wherein the one carrier frequency for communicating beacon control  
4 signaling is part of the plurality of carrier frequencies allocated to the first cell segment.
- 1           3.     The method of claim 2, further comprising:  
2                 defining a hopping sequence among the allocated plurality of carrier  
3 frequencies; and  
4                 excluding the one carrier frequency for communicating beacon control  
5 signaling from the hopping sequence.
- 1           4.     The method of claim 3, further comprising communicating traffic channels  
2 carrying the bearer traffic on carrier frequencies assigned according to the hopping  
3 sequence.
- 1           5.     The method of claim 4, further comprising constantly communicating the  
2 beacon control signaling at the one carrier frequency.
- 1           6.     The method of claim 3, further comprising providing a fractional reuse  
2 pattern in the mobile communications network.

1           7.       The method of claim 6, further comprising using, in each cell segment, a  
2       fraction that is less than all of the allocated carrier frequencies at any one time.

1           8.       The method of claim 1, wherein allocating the one carrier frequency for  
2       communicating beacon control signaling comprises allocating the one carrier frequency  
3       for communicating a broadcast control channel.

1           9.       The method of claim 8, wherein defining the band of carrier frequencies  
2       for the mobile communications network comprises defining the band of carrier  
3       frequencies for at least one of the following networks: a Global System for Mobile  
4       (GSM) network; a General Packet Radio Service (GPRS) network; an Enhanced GPRS  
5       (EGPRS) network; and a Global System for Mobile/Enhanced Data Rate for Global  
6       Evolution Radio Access Network (GERAN).

1           10.      The method of claim 1, further comprising providing a fractional reuse  
2       pattern in the mobile communications network.

1           11.      The method of claim 10, wherein providing the fractional reuse pattern  
2       comprises providing one of a 1x3 fractional reuse pattern and a 1x1 fractional reuse  
3       pattern.

1           12.      An article comprising at least one storage medium containing instructions  
2       for providing communications in a mobile communications network having a band of  
3       carrier frequencies, the instructions when executed causing a system to:  
4                    assign, to a first cell segment, a first carrier frequency for communicating  
5       beacon control signaling from the band of carrier frequencies; and  
6                    assign, to another cell segment, the first carrier frequency to communicate  
7       traffic channels.

1           13.     The article of claim 12, wherein the instructions when executed cause the  
2 system to further assign a group of carrier frequencies to the first cell segment, the group  
3 comprising the first carrier frequency.

1           14.     The article of claim 13, wherein the instructions when executed cause the  
2 system to exclude the first carrier frequency from communicating traffic channels in the  
3 first cell segment.

1           15.     The article of claim 14, wherein the instructions when executed cause the  
2 system to further define a hopping sequence for the first cell segment among the group of  
3 carrier frequencies, the hopping sequence excluding the first carrier frequency.

1           16.     The article of claim 15, wherein the instructions when executed cause the  
2 system to further exclude carrier frequencies used for beacon control signaling in  
3 neighboring cell segments of the first cell segment from the hopping sequence.

1           17.     The article of claim 15, wherein the instructions when executed cause the  
2 system to further assign a fractional reuse pattern to the mobile communications network.

1           18.     The article of claim 12, wherein the beacon control signaling comprises a  
2 broadcast control channel.

1           19.     The article of claim 18, wherein the mobile communications network is  
2 selected from the group consisting of: a Global System for Mobile (GSM) network; a  
3 General Packet Radio Service (GPRS) network; an Enhanced GPRS (EGPRS) network;  
4 and a Global System for Mobile/Enhanced Data Rate for Global Evolution Radio Access  
5 Network (GERAN).

1           20.    A system controller, comprising:  
2                    an interface to communicate with cell site equipment of a mobile  
3   communications network; and  
4                    a processor adapted to assign carrier frequencies from an entire available  
5   band of carrier frequencies to cell segments,  
6                    the processor adapted to assign, to a first cell segment, a first carrier  
7   frequency to carry beacon control signaling, the first carrier frequency selected from the  
8   entire available band of carrier frequencies,  
9                    the processor adapted to assign, to another cell segment, the first carrier  
10   frequency to carry bearer traffic.

1           21.    The system controller of claim 20, wherein the processor is adapted to  
2   assign a plurality of carrier frequencies to the first cell segment, the plurality of carrier  
3   frequencies comprising the first carrier frequency,  
4                    the processor is adapted to further define a hopping sequence for the  
5   traffic channels in the first cell segment,  
6                    the hopping sequence including the plurality of carrier frequencies but  
7   excluding the first carrier frequency.

1           22.    The system controller of claim 21, wherein the processor is adapted to  
2   define a fractional reuse pattern for the mobile communications network.

1           23.    The system controller of claim 20, wherein the beacon control signaling  
2   comprises a broadcast control channel of a Global System for Mobile (GSM) mobile  
3   communications network.